Missouri Department of Natural Resources

PUBLIC NOTICE

DRAFT MISSOURI STATE OPERATING PERMIT

DATE: October 22, 2004

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: Peter Goode, Chief, NPDES Permits and Engineering Section. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by November 22, 2004 or received in our office by 5:00 p.m. on November 25, 2004. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR's website, http://www.dnr.mo.gov/wpscd/wpcp/homewpcp.htm , or at the Department of Natural Resources, Water Protection Program, 205 Jefferson Street, P.O. Box 176, Jefferson City, Missouri 65102, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: October 22, 2004 Permit Number: MO-0103039 Southwest Regional Office	
FACILITY NAME AND ADDRESS	**NAME AND ADDRESS OF OWNER**
Springfield Northwest WWTP 4801 North Highway 13 Springfield, MO 65803	City of Springfield P.O. Box 8368 Springfield, MO 65801
RECEIVING STREAM & LEGAL DESCRIPTION	**TYPE OF DISCHARGE**
See below	Municipal, upgrade

Outfall #001 – Little Sac River, Sec. 34, T30N, R22W, Greene County.
Outfall #002 – South Dry Sac, Sec. 3, T29N, R22W, Greene County.

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0103039
Owner:	City of Springfield
Address:	PO Box 8368, Springfield, MO 65801
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Springfield Northwest Wastewater Treatment Plant
Address:	4801 North Highway 13, Springfield, MO 65803
Legal Description:	Outfall #001: NE ¼, Sec. 34, T30N, R22W, Greene County Outfall #002: NE ¼, NE ¼, Sec. 3, T29N, R22W, Greene County
First Classified Stream and ID:	Outfall #001: Little Sac River (P)(01381) Outfall #002: South Dry Sac River (P)(01386)
USGS Basin & Sub-watershed No.:	Outfall #001 (10290106-050004), Outfall #002 (10290106-050002)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – WWTP - SIC #4952
Extended aeration/ultraviolet disinfection/
aerobic digester/ sludge is land applied.
Design population equivalent is 68,000.
Design flow is 6.8 MGD.
Actual flow is 3.6 MGD.
Design sludge production is 1,900 dry tons/year.

Outfall #002 – WWTP - SIC #4952
Peak flow settling basin/chlorination.
Design flow is 4.0 MGD.
Flow is dependent upon rainfall.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date

Director of Staff, Clean Water Commission

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand$_5$***	mg/L		30	20	once/weekday**	24 hr. comp
Total Suspended Solids***	mg/L		30	20	once/weekday**	24 hr. comp
Ammonia as N	mg/L				once/weekday**	grab
(May 1 – Oct 31)		1.74		0.87		
(Nov 1 – April 30)		3.05		1.52		
Fecal Coliform****	#/100mL	00		400	once/weekday**	grab
Dissolved Oxygen	mg/			*****	once/weekday**	grab
pH – Units	U	****		******	once/weekday**	grab
Arsenic, Total Recoverable	µg/L	34.9		17.4	once/month	24 hr. comp
Cadmium, Total Recoverable	µg/L	20.6		10.3	once/month	24 hr. comp
Chromium, Total Recoverable	µg/L	62.3		31	once/month	24 hr. comp
Copper, Total Recoverable	µg/L	48.9		24.4	once/month	24 hr. comp
Lead, Total Recoverable	µg/L	27.9		13.9	once/month	24 hr. comp
Nickel, Total Recoverable	µg/L	872.5		434.9	once/month	24 hr. comp
Zinc, Total Recoverable	µg/L	372.8		185.8	once/month	24 hr. comp
Temperature	°F	*		*	once/weekday**	grab
Nitrate + Nitrite	mg/L	*		*	once/weekday**	grab
Total Kjeldahl Nitrogen	mg/L	*		*	once/weekday**	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____.

Total Toxic Organics (Note 1)	µg/L	*******		*******	once/month	24 hr. comp

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Whole Effluent Toxicity (WET) Test	% Survival	See Special Conditions			once/year in August	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE _____.						
Outfall #002						
Flow (Note 2)	MGD	*		*	Note 4	24 hr. total
Biochemical Oxygen Demand$_5$	mg/L		45		Note 4	grab
Ammonia as N	mg/L	*		*	Note 4	grab
Total Suspended Solids	mg/L		45		Note 4	grab
Fecal Coliform****	#/100mL		0	400	Note 4	grab
pH – Units		**		******	Note 4	grab
Total Residual Chlorine				*	Note 4	grab
Temperature		*		*	Note 4	grab
Influent Monitoring						
Biochemical Oxygen Demand$_5$	mg/L		*		*	
Total Suspended Solids	mg/L		*		*	
Fecal Coliform	#/100mL	*			*	
Ammonia as N	mg/L		*		*	
pH – Units	SU	*			*	
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____.						
Arsenic, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Cadmium, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Chromium, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Copper, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Lead Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Nickel Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Influent Monitoring (continued)						
Boron, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Cyanide, Amenable to Chlorination	mg/L	*		*	once/quarter (Note 5)	grab
Total Toxic Organics (Note 1)	mg/L	*			once/quarter (Note 5)	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE _____.						
Instream Monitoring (Note 3)						
Flow		*		*	once/month	instantaneous estimate
Fecal Coliform	#			*	once/month	grab
Temperature		*		*	once/month	grab
pH – Units	SU	*		*	once/month	grab
Ammonia as N	mg/L	*		*	once/month	grab
Cyanide, Amenable to Chlorination	mg/L	*		*	once/month	grab
Dissolved Oxygen	mg/L	*		*	once/month	grab
Arsenic, Dissolved	mg/L	*		*	once/month	grab
Cadmium, Dissolved	mg/L	*		*	once/month	grab
Chromium, Dissolved	mg/L	*		*	once/month	grab
Copper, Dissolved	mg/L	*		*	once/month	grab
Nickel, Dissolved	mg/L	*		*	once/month	grab
Lead, Dissolved	mg/L	*		*	once/month	grab
Zinc, Dissolved	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

*	Monitoring requirement only.
**	Once each weekday means: Monday, Tuesday, Wednesday, Thursday, and Friday.
***	This facility is required to meet a removal efficiency of 85% or more.
****	Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.
*****	Dissolved oxygen shall be maintained at a level equal to or above 6.0 mg/L or 80% of saturation, whichever is least.
******	pH is measured in pH units and is not to be averaged. The pH is restricted to the range of 6.0-9.0 pH units.
*******	The permittee shall monitor and report the effluent concentrations for these parameters. The Missouri Department of Natural Resources can reopen this permit to eliminate monitoring requirements, or establish specific effluent limits. These modifications would be based on the monitoring data and one or more of the following:

(a) Results of toxicity testing conducted by the Missouri Department of Natural Resources on the effluent.
(b) Results of toxicity testing conducted by the permittee and approved by the Missouri Department of Natural Resources.
(c) Missouri water quality standards in effect for these parameters.

Note 1 – See Total Toxic Organics Page

Note 2 – All wastewater flows below 0.8 MGD shall be routed and treated at Outfall #001. Outfall #002 shall only be used for discharge when precipitation causes the incoming wastewater flows to exceed the capacity of #001 and the storage capacity of #002.

Note 3 – Stream monitoring shall occur below the Highway 13 bridge below the confluence of the Little Sac and South Dry Sac River in the NW ¼, Sec. 35, T30N, R22W, Greene County and at the Farm Road 129 bridge in the SE ¼, SE ¼, Sec. 28, T30N, R22W, Greene County.

Note 4 – Samples shall be collected of each discharge event.

Note 5 – Sample once per quarter in the months of January, April, July, and October.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

TOTAL TOXIC ORGANICS

Acenaphthene
Acrolein
Acrylonitrile
Benzene
Benzidine
Carbon Tetrachloride (tetrachloromethane)
Chlorobenzene
1,2,4-trichlorobenzene
Hexachlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
Hexachloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Bis (2-chloroethyl) ether
2-chloroethyl vinyl ether
N-nitrosodi-n-propylamine
Pentachlorophenol
Phenol
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate

Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
1,2-benzanthracene (benzo(a)anthracene)
Benzo(a)pyrene (3,4-benzopyrene)
3,4-benzofluoranthene (benzo(b)fluoranthene)
11,12-benzofluoranthene (benzo(k)fluoranthene)
Chrysene
Anthracene
1,12-benzoperylene (benzo(ghi)perylene)
Fluorene
2-chloronaphthalene
2,4,6-trichlorophenol
Parachlorometa cresol
Chloroform (trichloromethane)
2-chlorophenol
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichorobenzene
3,3-dichlorobenzidine
1,1-dichloroethylene
1,2-trans-dichloroethylene
2,4-dichlorophenol
1,2-dichloropropane (1,3-dichloropropane)
2,4-dimethylphenol
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Ethylbenzene
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis (2-chloroisopropyl) ether
Bis (2-chloroethoxy) methane
Methylene Chloride (dichloromethane)
Methyl Chloride (chloromethane)
Methyl bromide (bromomethane)
Bromoform (tribromomethane)
Dichlorobromomethane
Chlorodibromemethane
Hexachlorobutadiene
Hexachlorocyclo[illegible]diene
Isophorone
Naph[illegible]e
N[illegible]enzene
2-n[illegible]l
4-nit[illegible]enol
4-di[illegible]phenol
[illegible]in[illegible]o-cresol
N-[illegible]rosodimethylamine
N-nitrosodiphenylamine
Phenanthrene
1,2,5,6-dibenzanthracene (dibenzo(a,h)anthracene)
Indeno (1,2,3-cd) pyrene
(2,3-o-phenylene pyrene)
Pyrene
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl Chloride (chloroethylene)
Aldrin
Dieldrin
Chlordane (technical mixture and metabolites)
4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide (BHC hexachlorocyclohexane)
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC (PCB polychlorinated biphenyls)
PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)
PCB-1248 (Arochlor 1248)
PCB-1260 (Arochlor 1260)
PCB-1016 (Arochlor 1016)
Toxaphene

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.

3. Permittee will cease discharge by connection to areawide wastewater treat[illegible]ithin 90 days of notice of its availability.

4. Changes in Discharges of Toxic Substances

   The permittee shall notify the Director as soo[illegible]t kn[illegible]s or [illegible]to [illegible]eve:
   (a) That any activity has occurr[illegible]d oc[illegible]d wou[illegible]sult [illegible]the discharge of any toxic pollutant which is not limited in the permit, if tha[illegible]cha[illegible]yi[illegible]ce[illegible]h[illegible]st of the following "notification levels:"
      (1) One hundred microgr[illegible] per[illegible] (1[illegible]µg/L),
      (2) Two hundred micrograms per [illegible] (2[illegible]µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinit[illegible]and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established in Part A of the permit by the Director.
   (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

5. Report as no-discharge when a discharge does not occur during the report period.

6. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (continued)

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
   (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
   (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

8. The department has approved the construction permit program to regulate and approve construction of a sanitary sewer in the area tributary to this wastewater treatment plant. This approval may be revoked by the department if the city sewage collection, transportation, or treatment facilities reach their design limitations, if the facility falls into chronic noncompliance with the permit, or if the city fails to follow the terms and conditions of the approved program.

   When any of the above mentioned conditions are met, the permittee will be notified and the construction permit authorization shall be terminated.

9. The permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference.

10. The permittee shall submit to this Department the Wastewater Treatment Sludge Operation Sludge Monitoring Report as outlined in 10 CSR 20-9.010. The permittee shall submit the above required report monthly and the report shall be due no later than the 28th day of the month following the reporting period.

11. The permittee shall maintain records of all wet weather bypassing of the collection system lift stations and the sewage treatment plant. These records shall document the duration and date of the bypassing, the magnitude of the precipitation event causing the bypassing and the route of flow of the bypass (i.e. bypass to final clarifier or receiving stream). Incidents of bypassing with the above information shall be included in narrative form with the discharge monitoring reports.

12. The permittee shall submit a report semi-annually with the Discharge and Monitoring Reports which address measures taken to locate and eliminate sources of infiltration and inflow into the city's collection system.

13. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
Outfall #001	100%	Annually	24 hr. comp.	August

   (a) Test Schedule and Follow-Up Requirements
      (1) Perform a single-dilution test in the months and at the frequency specified above.
      If the effluent passes the test, do not repeat the test until the next test period. Submit results with the annual report.
      If the effluent fails the test, a multiple dilution test shall be performed within 30 days, and biweekly thereafter, until one of the following conditions are met:
         (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
         (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
      (2) The permittee shall submit a summary of all test results for the test series to the WPP, Water Quality & Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 days of the third failed test. DNR will contact the permittee with initial guidance on conducting a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE). The permittee shall submit a plan for conducting a TIE or TRE to the Water Quality & Monitoring and Assessment Section of the WPP within 60 days of the date of DNR's letter. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

C. SPECIAL CONDITIONS (continued)

13. Whole Effluent Toxicity (WET) tests shall be conducted as follows: (continued)

(3) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
(4) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
(5) In addition to the WET test summary report required in part (2), all failing test results shall be reported to DNR within 14 days of the availability of the results.
(6) All WET test results for the reporting period shall be summarized and submitted to DNR by the end of the following October. When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

(b) PASS/FAIL procedure and effluent limitations
(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.
(2) To pass a multiple-dilution test:
(a) the computed percent effluent at the edge of the zone of initial [illegible], [illegible]ptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC_{50} co[illegible]ration for t[illegible]ost sensitive of the test organisms; or,
(b) all dilutions equal to or greater than the AEC mu[illegible]onto[illegible]ailure of o[illegible]ultiple-dilution test is an effluent limit violation.

(c) Test Conditions
(1) Test species: Ceriodaphnia [illegible]d F[illegible]s pro[illegible]s (fa[illegible]ad minnow). Organisms used in WET testing should come from culture[illegible]red [illegible]he [illegible]co[illegible]cting toxicity tests and should be cultured in a manner consistent with the most cu[illegible]t US[illegible]A g[illegible]line[illegible]. All test animals should be cultured as described in EPA-600/4-90/027.
(2) Test period: 48 hours at the "[illegible]le Effluent Concentration" (AEC) specified above.
(3) When dilutions are required, u[illegible]eam receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
(4) Tests should be initiated immediately after the sample is collected, but tests must be initiated no later than 36 hours after sample collection.
(5) Single-dilution tests will be run with:
(a) Effluent at the AEC concentration;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.
(6) Multiple-dilution tests will be run with:
(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.
(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to
Aeration:	None
Dilution water:	Upstream ing w if no upstr flow, synthetic water fied t eff hardness.
Endpoint:	M ity (s ficant difference from upstream ing w con ol at p≤ 0.05)
Test acceptability criterion:	0 re survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at p≤ 0.05)
Test Acceptability criterion:	90% or greater survival in controls

Date of Fact Sheet: October 7, 2004

Date of Public Notice: October 22, 2004

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
FACT SHEET

This Fact Sheet explains the applicable regulations, rationale for development of this permit and the public participation process.

NPDES PERMIT NUMBER: MO0103039

FACILITY NAME: Springfield Northwest Wastewater Treatment Plant

OWNER NAME: City of Springfield

LOCATION: Outfall #001 - Sec. 34 T 30N R 22W County: Greene
Outfall #002 – Sec. 3 T 29N R 22W County: Greene

RECEIVING STREAM: Outfall #001 – Little Sac River
Outfall #002 – South Dry Sac River

FACILITY CONTACT PERSON: Charles Parrott TELEPHONE: (417) 833-0697

FACILITY DESCRIPTION AND RATIONALE

The City of Springfield has applied for a permit to expand it's Northwest WWTP. Phase I of the upgrade will consist of an extended aeration plant with seasonal ultraviolet disinfection, an aerobic sludge digestor, and land application of the sludge. Design population equivalent is 68,000, with a design flow of 6.8 MGD.

Effluent limitations for Outfall #001are based on the attached Water Quality Review Sheet. The effluent limitations for Outfall #002 are based on the current permit and the Missouri Department of Natural Resources Effluent Regulations, 10 CSR 20-7.015(8)E.

This permit will be issued for a period of five years.

Missouri Department of Natural Resource
Water Protection Program
NODES Permits & Engineering Section

Water Quality Review Sheet
Determination of Effluent Limits

Facility Information

FACILITY NAME: Springfield NW WWTP NPDES #: MO0103039

FACILITY TYPE/DESCRIPTION: Outfall 001: Extended aeration, chlorination, aerobic digester, sludge is land applied
Outfall 002: Peak flow settling basin, chlorination

		8- DIGIT HUC:	COUNTY:
ECOREGION:	Ozark Highlands	10290106	Greene
	Central Irregular Plains	Osage Plains	
	Mississippi Alluvial Plains	Ozark Highlands	

	LEGAL DESCRIPTION:	LATITUDE/LONGITUDE:
OUTFALL #001:	NE ¼, Sec 34, T30N, R22W	+37 17 17.3 /-093 20 31.0
OUTFALL #002:	NE ¼, NE ¼, Sec 3, T29N, R22W	+37 16 26.2 /-093 18 36.7

WATER QUALITY HISTORY:

According to WQIS Screen #9- A stream survey was conducted 1/7/01 by S.G. for 305(b) review. A survey was conducted 7/22/99 by J.F. for fecal coliform. Stream surveys were conducted in 1995 by J.F. and 1994 by R.N.

According to WQIS Screen #10- The facility was issued a notice of violation 3/15/02 for construction/installation/modification of a portion of the sewer system (Fox Creek Subdivision) without a permit. The facility was responsible for a fish kill April 18-19, 2000 as a result of low dissolved oxygen and elevated ammonia from a bypass.

According to WQIS Screen #11- The last inspection was conducted 2/26/02 and resulted in the issuance of a NOV. Inspections on 3/22/01 and 3/30/99 showed the facility in noncompliance for bypassing.

According to WQIS Screen #14- The facility exceeded Chlorine limits 4/98, 5/98, 6/98, 7/98, 8/98, 10/98, 5/99; Dissolved Oxygen limits 4/98, 8/98, 7/99; and Fecal Coliform limits 8/00, 9/00, 5/01, 6/01 at Outfall #001.

MDNR-WPP was contacted by Carollo Engineers to review the limits for the treatment plant for a proposed two-phase upgrade of the facility. The location indicated by Carollo Engineers on the reproduction of the USGS topographic map and aerial photo enclosed with the request implies that only the facility associated with Outfall #001 will be upgraded.

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	TREATMENT TYPE	RECEIVING WATERBODY	OTHER
001	Current- 9.9	Extended aeration, chlorination, aerobic digester, sludge is land applied	Little Sac River	WBID #1381
	Phase I- 15.44			
	Phase II- 19.74			
002	Current- 6.19	Peak flow settling basin, chlorination	South Dry Sac River	unclassified
	No upgrade indicated for the Outfall #002 Facility			

Receiving Waterbody Information

WATERBODY	CLASS	7Q10(CFS)	*DESIGNATED USES	OTHER CHARACTERISTICS
Little Sac River	P	4	CLF, BTG, WBC, AQL,LWW	1998 303(d) list
South Dry Sac River	U	0	none	South Dry Sac River is listed as a Class P stream 0.04 miles below Outfall #002

*Cool Water Fishery (CLF), Cold Water Fishery (CDF), Irrigation (IRR), Industrial (IND), Boating & Canoeing (BTG), Drinking Water Supply (DWS), Whole Body Contact Recreation (WBC), Protection of Warmwater Aquatic Life and Human Health (AQL), Livestock & Wildlife Watering (LWW)

COMMENTS: The Little Sac River is on the 1998 303(d) list as being impaired by fecal coliform from the Springfield NW WWTP and is scheduled for TMDL development during 2003. It was determined that the Springfield NW WWTP is neither the only or primary source for fecal coliform in the Little Sac River. The impairment is due to both point and non-point sources and the source of impairment has been changed on the proposed 2002 303(d) list. Limits derived below may be subject to revision after the completion of the TMDL.

The 7Q10 of the Little Sac River (4cfs) was obtained from a previous WQRS completed 3-28-02 by R.G. for the reissuance of the permit.

The classified portion of the South Dry Sac River, WBID #1386, is designated for Protection of Warmwater Aquatic Life & Human Health and Livestock and Wildlife Watering.

MIXING CONSIDERATIONS OUTFALL #001

Mixing Zone. One quarter of the volume of flow (=1cfs); length of one quarter mile as per 10 CSR 20-7.031(4)(A)5.B.(III)(a).

Zone of Initial Dilution (Z.I.D.). One tenth of the mixing zone volume of flow (=0.1cfs) as per 10 CSR 20-7.031(4)(A)5.B.(III)(b).

MIXING CONSIDERATIONS OUTFALL #002

Mixing Zone. No mixing zone is allowed as the receiving stream is unclassified.

Zone of Initial Dilution (Z.I.D.). No zone of initial dilution is allowed as the receiving stream is unclassified.

Permit Limits And Information for current design flow

OUTFALL #001

TMDL WATERSHED: (Y OR N) [Y] W.L.A. STUDY CONDUCTED: (Y OR N) [Y] DISINFECTION REQUIRED: (Y OR N) [Y] DISINFECTION WAIVER: (Y, N, NA) [N]

WET TEST (Y OR N): [Y] FREQUENCY: ONCE/YEAR A.E.C. 100% LIMIT: NO SIGNIFICANT MORTALITY

PARAMETER	MAXIMUM DAILY LIMIT	AVERAGE WEEKLY LIMIT	AVERAGE MONTHLY LIMIT	MONITORING FREQUENCY	SAMPLE TYPE
FLOW	*		*	Once/Day	24 HOUR TOTAL
TEMPERATURE °F	*		*	ONCE/WEEKDAY	GRAB
pH UNITS	**		**	ONCE/WEEKDAY	GRAB
TOTAL SUSPENDED SOLIDS		30 mg/L	20 mg/L	ONCE/WEEKDAY	24 HOUR COMPOSITE
BIOCHEMICAL OXYGEN DEMAND$_5$		30 mg/L	20 mg/L	ONCE/WEEKDAY	24 HOUR COMPOSITE
AMMONIA AS N MAY 1-OCT 31	1.80 mg/L		0.90 mg/L	ONCE/WEEKDAY	GRAB
AMMONIA AS N NOV 1- APRIL 31	3.15 mg/L		1.57 mg/L	ONCE/WEEKDAY	GRAB

Nitrate + Nitrite as N	*		*	Once/Weekday	Grab
Total Kjeldahl Nitrogen	*		*	Once/Weekday	Grab
Fecal Coliform Colonies/100mL	1000		400	Once/Weekday	Grab
Total Residual Chlorine	0.01 mg/L		0.01 mg/L	Once/Weekday	Grab
Dissolved Oxygen	***		***	Once/Weekday	Grab
Arsenic- Total Recoverable	36.1 µg/L		18.0 µg/L	Once/Month	24 hour composite
Cadmium- Total Recoverable	21.3 µg/L		10.6 µg/L	Once/Month	24 hour composite
Chromium- Total Recoverable	62.5 µg/L		31.2 µg/L	Once/Month	24 hour composite
Copper- Total Recoverable	43.4 µg/L		21.6 µg/L	Once/Month	24 hour composite
Lead- Total Recoverable	28.9 µg/L		14.4 µg/L	Once/Month	24 hour composite
Nickel- Total Recoverable	902.2 µg/L		449.7 µg/L	Once/Month	24 hour composite
Zinc- Total Recoverable	374.1 µg/L		186.4 µg/L	Once/Month	24 hour composite
Total Toxic Organics	*		*	Once/Month	24 hour composite

* Monitoring requirement only.
** pH is to be measured in standard pH units and is not to be averaged. pH shall be maintained in the range of 6.5-9.0 pH units.
*** Dissolved Oxygen shall be maintained at or above 6 mg/L or 80% saturation; whichever is less.

OUTFALL #002

TMDL Watershed: (Y or N) [Y]
W.L.A. Study Conducted: (Y or N) [Y]
Disinfection Required: (Y or N) [N]
Disinfection Waiver: (Y, N, NA) [N/A]

Wet Test (Y or N): [N] Frequency: _____ A.E.C. _____ Limit: _____

PARAMETER	Maximum Daily Limit	Average Weekly Limit	Average Monthly Limit	Monitoring Frequency	Sample type
Flow	*		*	Once/Day per Discharge event	24 hour total
Temperature °F	*		*	Once/Weekday	Grab
pH Units	**		**	Once/Discharge event	Grab
Total Suspended Solids		30 mg/L	20 mg/L	Once/Discharge event	Grab
Biochemical Oxygen Demand$_5$		30 mg/L	20 mg/L	Once/Discharge event	Grab
Ammonia as N May 1-Oct 31	1.65 mg/L		0.82 mg/L	Once/Discharge event	Grab
Ammonia as N Nov 1- April 31	2.87 mg/L		1.43 mg/L	Once/Discharge event	Grab
Nitrate + Nitrite as N	*		*	Once/Discharge event	Grab
Total Kjeldahl Nitrogen	*		*	Once/Discharge event	Grab
Fecal Coliform Colonies/100mL	1000		400	Once/Discharge event	Grab

DISSOLVED OXYGEN	***		***	Once/Discharge event	GRAB
ARSENIC- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
CADMIUM- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
CHROMIUM- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
COPPER- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
LEAD- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
NICKEL- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
ZINC- TOTAL RECOVERABLE	*		*	Once/Discharge event	GRAB
TOTAL TOXIC ORGANICS	*		*	Once/Discharge event	GRAB

* Monitoring requirement only.
** pH is to be measured in standard pH units and is not to be averaged. pH shall be maintained in the range of 6.5-9.0 pH units.
*** Dissolved Oxygen shall be maintained at or above 6 mg/L or 80% saturation; whichever is less.

Receiving Water Monitoring Requirements

Site 001. (Upstream)

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Flow	Once/Month	Instantaneous Estimate	Highway 13 Bridge below the confluence of the Little Sac River and South Dry Sac River. NW¼, Sec 35, T30N, R22W. +37 17 07.4 / -093 19 42.4
pH Units	Once/Month	Grab	
Temperature °F			
Ammonia as N mg/L			
Fecal Coliform Colonies/100mL			
Dissolved Oxygen mg/L			
Arsenic- Dissolved µg/L			
Cadmium- Dissolved µg/L			
Chromium- Dissolved µg/L			
Copper- Dissolved µg/L			
Nickel- Dissolved µg/L			
Lead- Dissolved µg/L			
Zinc- Dissolved µg/L			
Total Toxic Organics µg/L			

Site 002. (Downstream)

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Flow	Once/Month	Instantaneous Estimate	Farm Road 129 Bridge SE¼, SE¼, Sec. 28, T30N, R22W. +37 17 33.4 / -093 21 02.3
Temperature °F	Once/Month	Grab	
pH Units			
Ammonia as N mg/L			
Fecal Coliform Colonies/100mL			
Dissolved Oxygen mg/L			
Arsenic- Dissolved µg/L			
Cadmium- Dissolved µg/L			
Chromium- Dissolved µg/L			
Copper- Dissolved µg/L			
Nickel- Dissolved µg/L			
Lead- Dissolved µg/L			
Zinc- Dissolved µg/L			
Total Toxic Organics µg/L			

Please report the date, time, and location for each parameter sampled along with the average daily flow (actual flow measured or estimated, not design flow). All the parameters should be sampled on the same day and within no more than a 2-hour period. If dissolved oxygen (DO) is to be sampled, sampling should take place at dawn. If discharge is contingent to storm events, rainfall should be measured every time there is a discharge.

Derivation and Discussion of Limits

Total Suspended Solids. Criterion of 20 mg/L average monthly limit and 30 mg/L average weekly limit from current NPDES permit.

Biochemical Oxygen Demand$_5$. Criterion of 20 mg/L average monthly limit and 30 mg/L average weekly limit from current NPDES permit.

Ammonia as N. Maximum Daily (MDL) and Average Monthly (AML) limits were calculated in accordance with methods outlined in EPA/505/2-90-001.

Ammonia as N = Total Ammonia / 1.2

Outfall #001.

Summer: Total Ammonia criteria- 1.2 mg/L, Chronic GWWF, 26°C, pH 7.8; 10 CSR 20-7 Table B
Winter: Total Ammonia criteria- 2.1 mg/L, Chronic GWWF, 6°C, pH 7.8; 10 CSR 20-7 Table B

$$\text{WLA} = \frac{\text{Water Quality Criteria (Stream flow + Effluent Flow) – (Stream flow * Stream concentration)}}{\text{Effluent flow}}$$

Note: In the absence of data, the stream concentration of NH_3 as N is assumed to be 0.

Season	W.L.A	L.T.A	M.D.L.	A.M.L.
Summer (April 1 - October 31)	1.10	0.58	1.80	0.90
Winter (November 1 – March 31)	1.92	1.01	3.15	1.57

C.V. = 0.6, n = 4

Outfall #002.

Ammonia Decay (Summer): 0.07 mg/l per mile

Ammonia Decay (Winter): 0.03 mg/l per mile

Summer: Total Ammonia criteria- 1.2 mg/L, Chronic GWWF, 26°C, pH 7.8; 10 CSR 20-7 Table B
NH_3 as N = [(1.2/1.2) + (0.04 miles * 0.07 mg/L/mile)]= 1.003 mg/L WLA
Winter: Total Ammonia criteria- 2.1 mg/L, Chronic GWWF, 6°C, pH 7.8; 10 CSR 20-7

Table B
NH_3 as N = [(2.1/1.2) + (0.04 miles * 0.03 mg/L/mile)]= 1.753 mg/L WLA

Season	W.L.A	L.T.A	M.D.L.	A.M.L.
Summer (April 1 - October 31)	1.00	0.53	1.65	0.82
Winter (November 1 – March 31)	1.75	0.92	2.87	1.43

C.V. = 0.6, n = 4

Fecal Coliform. Criterion: 400 fecal coliform colonies monthly average, 1000 fecal coliform colonies daily maximum as per 10 CSR 20-7.015(8)(B)4A.

pH: Criterion: between 6.5 – 9.0 standard units as per 10 CSR 20-7.031(4)(E).

Chlorine- Total Residual. Criterion: 0.01 mg/L (0.05 mg/L detectable limit) from 10 CSR 20-7 Table A.

Metals. Effluent limits were developed for metals found in the current Springfield NW WWTP operating permit. Maximum Daily (MDL) and Average Monthly (AML) limits were calculated in accordance with methods outlined in EPA/505/2-90-001. Maximum daily and average monthly limits are Total Recoverable Metals.

Parameter	W.L.A.	L.T.A.	M.D.L.	A.M.L.
Arsenic (µg/L)	22.02	11.60	36.1	18.0
Cadmium (µg/L)	12.99	6.85	21.3	10.6
Chromium (µg/L)	62.62	20.10	62.5	31.2
Copper (µg/L)	43.43	13.94	43.4	21.6
Lead (µg/L)	17.61	9.28	28.9	14.4
Nickel (µg/L)	550.51	290.1	902.2	449.7
Zinc (µg/L)	374.74	120.29	374.1	186.4

C.V. = 0.6, n = 4

Arsenic**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic Protection of Aquatic Life); Maximum daily value 36.1 µg/L, average monthly value 18.0 µg/L.

Cadmium**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 21.3 µg/L, average monthly value 10.6 µg/L.

Chromium**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 62.5 µg/L, average monthly value 31.2 µg/L.

Copper**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 43.4 µg/L, average monthly value 21.6 µg/L.

Lead**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic all waters); Maximum daily value 28.9 µg/L, average monthly value 14.4 µg/L.

Nickel**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 902.2 µg/L, average monthly value 449.7 µg/L.

Zinc**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 374.1 µg/L, average monthly value 186.4 µg/L.

Permit Limits And Information for Phase I Upgrade

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	TREATMENT TYPE	RECEIVING WATERBODY	OTHER
001	Phase I- 15.44	Extended aeration, chlorination, aerobic digester, sludge is land applied	Little Sac River	WBID #1381

MIXING CONSIDERATIONS OUTFALL #01

Mixing Zone. One quarter of the volume of flow (= 1cfs); length of one quarter mile as per 10 CSR 20-7.031(4)(A)5.B.(III)(a).

Zone of Initial Dilution (Z.I.D.). One tenth of the mixing zone volume of flow (= 0.1cfs) as per 10 CSR 20-7.031(4)(A)5.B.(III)(b).

OUTFALL #001

TMDL WATERSHED: (Y OR N) [Y] W.L.A. STUDY CONDUCTED: (Y OR N) [Y] DISINFECTION REQUIRED: (Y OR N) [Y] DISINFECTION WAIVER: (Y, N, NA) [N]

WET TEST (Y OR N): [Y] FREQUENCY: ONCE/YEAR A.E.C. 100% LIMIT: NO SIGNIFICANT MORTALITY

PARAMETER	MAXIMUM DAILY LIMIT	AVERAGE WEEKLY LIMIT	AVERAGE MONTHLY LIMIT	MONITORING FREQUENCY	SAMPLE TYPE
FLOW	*		*	Once/Day	24 HOUR TOTAL
TEMPERATURE °F	*		*	ONCE/WEEKDAY	GRAB
PH UNITS	**		**	ONCE/WEEKDAY	GRAB
TOTAL SUSPENDED SOLIDS		Note 1	Note 1	ONCE/WEEKDAY	24 HOUR COMPOSITE
BIOCHEMICAL OXYGEN DEMAND$_5$		Note 1	Note 1	ONCE/WEEKDAY	24 HOUR COMPOSITE
AMMONIA AS N MAY 1-OCT 31	1.74 mg/L		0.87 mg/L	ONCE/WEEKDAY	GRAB
AMMONIA AS N NOV 1- APRIL 31	3.05 mg/L		1.52 mg/L	ONCE/WEEKDAY	GRAB
NITRATE + NITRITE AS N	*		*	ONCE/WEEKDAY	GRAB
TOTAL KJELDAHL NITROGEN	*		*	ONCE/WEEKDAY	GRAB
FECAL COLIFORM COLONIES/100ML	1000		400	ONCE/WEEKDAY	GRAB
TOTAL RESIDUAL CHLORINE	0.01 mg/L		0.01 mg/L	ONCE/WEEKDAY	GRAB
DISSOLVED OXYGEN	***		***	ONCE/WEEKDAY	GRAB
ARSENIC- TOTAL RECOVERABLE	34.9 µg/L		17.4 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
CADMIUM- TOTAL RECOVERABLE	20.6 µg/L		10.3 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
CHROMIUM- TOTAL RECOVERABLE	62.3 µg/L		31.0 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
COPPER- TOTAL RECOVERABLE	48.9 µg/L		24.4 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
LEAD- TOTAL RECOVERABLE	27.9 µg/L		13.9 µg/L	ONCE/MONTH	24 HOUR COMPOSITE

NICKEL- TOTAL RECOVERABLE	872.5 µg/L		434.9 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
ZINC- TOTAL RECOVERABLE	372.8 µg/L		185.8 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
TOTAL TOXIC ORGANICS	*		*	ONCE/MONTH	24 HOUR COMPOSITE

* Monitoring requirement only.
** pH is to be measured in standard pH units and is not to be averaged. pH shall be maintained in the range of 6.0-9.0 pH units.
*** Dissolved Oxygen shall be maintained at or above 6 mg/L or 80% saturation; whichever is less.

Receiving Water Monitoring Requirements

Receiving stream monitoring requirements will be the same as outlined above.

Please report the date, time, and location for each parameter sampled along with the average daily flow (actual flow measured or estimated, not design flow). All the parameters should be sampled on the same day and within no more than a 2-hour period. If dissolved oxygen (DO) is to be sampled, sampling should take place at dawn. If discharge is contingent to storm events, rainfall should be measured every time there is a discharge.

Derivation and Discussion of Limits

Total Suspended Solids. Criterion of 20 mg/L average monthly limit and 30 mg/L average weekly limit from current NPDES permit.

Ammonia as N. Maximum Daily (MDL) and Average Monthly (AML) limits were calculated in accordance with methods outlined in EPA/505/2-90-001.

Ammonia as N = Total Ammonia / 1.2

Summer: Total Ammonia criteria- 1.2 mg/L, Chronic GWWF, 26°C, pH 7.8; 10 CSR 20-7 Table B
Winter: Total Ammonia criteria- 2.1 mg/L, Chronic GWWF, 6°C, pH 7.8; 10 CSR 20-7 Table B

$$WLA = \frac{\text{Water Quality Criteria (Stream flow + Effluent Flow) – (Stream flow * Stream concentration)}}{\text{Effluent flow}}$$

Note: In the absence of data, the stream concentration of NH_3 as N is assumed to be 0.

Season	W.L.A	L.T.A	M.D.L.	A.M.L.
Summer (April 1 - October 31)	1.06	0.56	1.74	0.87
Winter (November 1 – March 31)	1.86	0.98	3.05	1.52

C.V. = 0.6, n = 4

Fecal Coliform. Criterion: 400 fecal coliform colonies monthly average, 1000 fecal coliform colonies daily maximum as per 10 CSR 20-7.015(8)(B)4A.

pH: Criterion: between 6.5 – 9.0 standard units as per 10 CSR 20-7.031(4)(E).

Chlorine- Total Residual. Criterion: 0.01 mg/L (0.05 mg/L detectable limit) from 10 CSR 20-7 Table A.

Metals. Effluent limits were developed for metals found in the current Springfield NW WWTP operating permit. Maximum Daily (MDL) and Average Monthly (AML) limits were calculated in accordance with methods outlined in EPA/505/2-90-001. Maximum daily and average monthly limits are Total Recoverable Metals.

Parameter	W.L.A.	L.T.A.	M.D.L.	A.M.L.
Arsenic (µg/L)	21.30	11.22	34.9	17.4
Cadmium (µg/L)	12.56	6.62	20.6	10.3
Chromium (µg/L)	62.40	20.03	62.3	31.0
Copper (µg/L)	29.81	15.71	48.9	24.4
Lead (µg/L)	17.04	8.98	27.9	13.9
Nickel (µg/L)	532.38	280.56	872.5	434.9
Zinc (µg/L)	373.40	119.86	372.8	185.8

C.V. = 0.6, n = 4

Arsenic**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic Protection of Aquatic Life); Maximum daily value 34.9 µg/L, average monthly value 17.4 µg/L.

Cadmium**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 20.6 µg/L, average monthly value 10.3 µg/L.

Chromium**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 62.3 µg/L, average monthly value 31.0 µg/L.

Copper**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 48.9 µg/L, average monthly value 24.4 µg/L.

Lead**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic all waters); Maximum daily value 27.9 µg/L, average monthly value 13.9 µg/L.

Nickel**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 872.5 µg/L, average monthly value 434.9 µg/L.

Zinc**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 372.8 µg/L, average monthly value 185.8 µg/L.

Note 1: A Waste Load Allocation study will be done during 2004 to determine appropriate Total Suspended Solids and Biochemical Oxygen Demand$_5$ effluent limits to maintain in-stream Dissolved Oxygen concentrations.

Permit Limits And Information for Phase II Upgrade

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	TREATMENT TYPE	RECEIVING WATERBODY	OTHER
001	Phase II- 19.74	Extended aeration, chlorination, aerobic digester, sludge is land applied	Little Sac River	WBID #1381

MIXING CONSIDERATIONS OUTFALL #01

Mixing Zone. One quarter of the volume of flow (= 1cfs); length of one quarter mile as per 10 CSR 20-7.031(4)(A)5.B.(III)(a).

Zone of Initial Dilution (Z.I.D.). One tenth of the mixing zone volume of flow (=0.1cfs) as per 10 CSR 20-7.031(4)(A)5.B.(III)(b).

OUTFALL #001

TMDL WATERSHED: (Y OR N)	W.L.A. STUDY CONDUCTED: (Y OR N)	DISINFECTION REQUIRED: (Y OR N)	DISINFECTION WAIVER: (Y, N, NA)
	Y	Y	Y	N

WET TEST (Y OR N): Y FREQUENCY: ONCE/YEAR A.E.C. 100% LIMIT: NO SIGNIFICANT MORTALITY

PARAMETER	MAXIMUM DAILY LIMIT	AVERAGE WEEKLY LIMIT	AVERAGE MONTHLY LIMIT	MONITORING FREQUENCY	SAMPLE TYPE
FLOW	*		*	Once/Day	24 HOUR TOTAL
TEMPERATURE °F	*		*	ONCE/WEEKDAY	GRAB
PH UNITS	**		**	ONCE/WEEKDAY	GRAB
TOTAL SUSPENDED SOLIDS		Note 1	Note 1	ONCE/WEEKDAY	24 HOUR COMPOSITE
BIOCHEMICAL OXYGEN DEMAND$_5$		Note 1	Note 1	ONCE/WEEKDAY	24 HOUR COMPOSITE
AMMONIA AS N MAY 1-OCT 31	1.71 mg/L		0.85 mg/L	ONCE/WEEKDAY	GRAB
AMMONIA AS N NOV 1- APRIL 31	3.01 mg/L		1.50 mg/L	ONCE/WEEKDAY	GRAB
NITRATE + NITRITE AS N	*		*	ONCE/WEEKDAY	GRAB
TOTAL KJELDAHL NITROGEN	*		*	ONCE/WEEKDAY	GRAB
FECAL COLIFORM COLONIES/100ML	1000		400	ONCE/WEEKDAY	GRAB
TOTAL RESIDUAL CHLORINE	0.01 mg/L		0.01 mg/L	ONCE/WEEKDAY	GRAB
DISSOLVED OXYGEN	***		***	ONCE/WEEKDAY	GRAB
ARSENIC- TOTAL RECOVERABLE	34.4 µg/L		17.2 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
CADMIUM- TOTAL RECOVERABLE	20.3 µg/L		10.1 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
CHROMIUM- TOTAL RECOVERABLE	62.2 µg/L		31.0 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
COPPER- TOTAL RECOVERABLE	43.1 µg/L		21.5 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
LEAD- TOTAL RECOVERABLE	27.6 µg/L		13.7 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
NICKEL- TOTAL RECOVERABLE	861.0 µg/L		429.1 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
ZINC- TOTAL RECOVERABLE	372.2 µg/L		185.5 µg/L	ONCE/MONTH	24 HOUR COMPOSITE
TOTAL TOXIC ORGANICS	*		*	ONCE/MONTH	24 HOUR COMPOSITE

* Monitoring requirement only.

** pH is to be measured in standard pH units and is not to be averaged. pH shall be maintained in the range of 6.0-9.0 pH units.

*** Dissolved Oxygen shall be maintained at or above 6 mg/L or 80% saturation; whichever is less.

Receiving Water Monitoring Requirements

Receiving stream monitoring requirements will be the same as outlined above.

Please report the date, time, and location for each parameter sampled along with the average daily flow (actual flow measured or estimated, not design flow). All the parameters should be sampled on the same day and within no more than a 2-hour period. If dissolved oxygen (DO) is to be sampled, sampling should take place at dawn. If discharge is contingent to storm events, rainfall should be measured every time there is a discharge.

Derivation and Discussion of Limits

Total Suspended Solids. Criterion of 20 mg/L average monthly limit and 30 mg/L average weekly limit from current NPDES permit.

Ammonia as N. Maximum Daily (MDL) and Average Monthly (AML) limits were calculated in accordance with methods outlined in EPA/505/2-90-001.

Ammonia as N = Total Ammonia / 1.2

Summer: Total Ammonia criteria- 1.2 mg/L, Chronic GWWF, 26°C, pH 7.8; 10 CSR 20-7 Table B
Winter: Total Ammonia criteria- 2.1 mg/L, Chronic GWWF, 6°C, pH 7.8; 10 CSR 20-7 Table B

$$\text{WLA} = \frac{\text{Water Quality Criteria (Stream flow + Effluent Flow) – (Stream flow * Stream concentration)}}{\text{Effluent flow}}$$

Note: In the absence of data, the stream concentration of NH_3 as N is assumed to be 0.

Season	W.L.A	L.T.A	M.D.L.	A.M.L.
Summer (April 1 - October 31)	1.05	0.55	1.71	0.85
Winter (November 1 – March 31)	1.84	0.97	3.01	1.50

C.V. = 0.6, n = 4

Fecal Coliform. Criterion: 400 fecal coliform colonies monthly average, 1000 fecal coliform colonies daily maximum as per 10 CSR 20-7.015(8)(B)4A.

pH: Criterion: between 6.5 – 9.0 standard units as per 10 CSR 20-7.031(4)(E).

Chlorine- Total Residual. Criterion: 0.01 mg/L (0.05 mg/L detectable limit) from 10 CSR 20-7 Table A.

Metals. Effluent limits were developed for metals found in the current Springfield NW WWTP operating permit. Maximum Daily (MDL) and Average Monthly (AML) limits were calculated in accordance with methods outlined in EPA/505/2-90-001. Maximum daily and average monthly limits are Total Recoverable Metals.

Parameter	W.L.A.	L.T.A.	M.D.L.	A.M.L.
Arsenic (µg/L)	21.0	11.1	34.4	17.2
Cadmium (µg/L)	12.4	6.5	20.3	10.1
Chromium (µg/L)	62.3	20.0	62.2	31.0
Copper (µg/L)	43.2	13.9	43.1	21.5
Lead (µg/L)	16.8	8.9	27.6	13.7
Nickel (µg/L)	525.3	276.9	861.0	429.1
Zinc (µg/L)	372.9	119.7	372.2	185.5

C.V. = 0.6, n = 4

Arsenic**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic Protection of Aquatic Life); Maximum daily value 34.4 µg/L, average monthly value 17.2 µg/L.

Cadmium**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 20.3 µg/L, average monthly value 10.1 µg/L.

Chromium**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 62.2 µg/L, average monthly value 31.0 µg/L.

Copper**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 43.1 µg/L, average monthly value 21.5 µg/L.

Lead**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic all waters); Maximum daily value 27.6 µg/L, average monthly value 13.7 µg/L.

Nickel**.** Criterion from 10 CSR 20-7.031 (Table A, Chronic GWWF); Maximum daily value 861.0 µg/L, average monthly value 429.1 µg/L.

Zinc**.** Criterion from 10 CSR 20-7.031 (Table A, Acute GWWF); Maximum daily value 372.2 µg/L, average monthly value 185.5 µg/L.

Note 1: A Waste Load Allocation study will be done during 2004 to determine appropriate Total Suspended Solids and Biochemical Oxygen Demand$_5$ effluent limits to maintain in-stream Dissolved Oxygen concentrations.

Reviewer: Joe Dom
Date: December 17, 2002
Unit Chief: Mohson Dkhili

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.